Full Resolution Digital Imagery Delivery for Emergency Response

The NCDOT Photogrammetry Unit is soliciting your feedback. We have been working on a new delivery method for full resolution georeferenced digital imagery for emergency response situations. The unit has been directed to have this web based delivery method in place for the 2013 hurricane season, and also to provide the service to both desktop and mobile device users. It is our hope you will review the following information, visit our web based demonstration project, and complete and return the feedback survey to Keith Johnston (kjohnston@ncdot.gov).

When natural disasters hit our state, the Photogrammetry Unit is often requested to obtain aerial imagery after the event to document the damage and to assist in recovery efforts. Aerial imagery prior to the event can also be provided. Delivery can be photographic quality plots, reduced resolution jpg files, or full resolution georeferenced digital imagery. Due to the size of the full resolution georeferenced digital imagery files, delivery has been on DVD or, in some cases, the NCDOT file transfer system.

NCDOT Photogrammetry now has access to ESRI's ArcGIS Online (AGOL) product and cloud resources to deliver its full resolution georeferenced digital imagery. In preparation for the upcoming hurricane season, the Photogrammetry Unit has created a web based demonstration project that displays aerial imagery in the Rodanthe area before and shortly following Hurricane Sandy. This demonstration project uses ESRI standard web mapping service templates for the user interface and serves as an interim solution to NCDOT's longer term plan for developing an image service using NCDOT resources. As with any use of standard templates or tools, some of its features will work better than others, so please keep that in mind as you exercise the demonstration project.

The demonstration project has examples of Final Georeferenced Imagery (FGI) and Preliminary Georeferenced Imagery (PGI). Both products are geometrically accurate and suitable for change detection, planning, basic measurement, functional design, preliminary design, and other applications. The difference in the products is the presence of image anomalies that occur at different stages during the image mosaicking process. We have included an Image Anomaly Example layer in the demonstration project that shows typical image issues found at the preliminary stage of the mosaicking process that are removed in the final product. The image anomaly layer is only to demonstrate the issues with the PGI and would not be part of the standard delivery. The FGI would replace the PGI at a later time transparently to the end users. The other key difference is the PGI is available 2-3 times earlier than the FGI as shown in Table 1 below.

Thank you for taking the time to review this information and exercising the aerial imagery emergency response demonstration project web site.

Keith Johnston, PE, PLS
State Photogrammetric Engineer

Table 1 - Time Frame for Posting Coastal Emergency Response Imagery to the Web^

Processing Level	Intended Use	Image Anomaly Examples	Demonstration Project Examples	Approximate Time to Web after Plane lands at RDU
Final Georeferenced Image (FGI)	Change Detection, Planning, Basic Measurement, Functional Design, Preliminary Design	no or minimal mismatches between features in adjacent frames, features not distorted due to seam lines	2010_Statewide 120604 (Lres) Oregon Inlet TO Ocracoke Inlet	45-60 hours (Lres)* 56-72 hours (Hres)*
Preliminary Georeferenced Image (PGI)	Change Detection, Planning, Basic Measurement, Functional Design, Preliminary Design	small mismatches between features in adjacent frames, distorted features due to seam lines through feature	121031 (Hres) Mirlo Beach 121031 (Lres) Pea Island New Inlet TO Rodanthe 121031 (Lres) Rodanthe TO North of Avon	21 -29 hours (Lres)* 23 - 31 hours (Hres)*

Notes

Lres - Full image resolution is between 0.5 to 1.0 feet unless otherwise noted.

Hres – high resolution image typically with full resolution at 0.25 feet or better (NC 12 Hot Spots).

Date of Photography – defined as yymmdd, so October 31, 2012 is 121031.

^ Assumes image collection based on Post Sandy Effort (low resolution for 40% of the NC coast & high resolution for NC 12 Hot Spots)

* Subject to: 1) no GPS issues on aircraft or inland base stations; 2) NCDOT network traffic & speed; 3) ESRI AGOL traffic & speed